

Q-1 For the 2023 Probe AO mission themes, is there a specific wavelength cut-off for exclusion or inclusion in order to meet the definition of a far infrared or X-ray probe? For example, can a far-infrared mission also include a mid-infrared instrument, so long as the far-infrared instrument is responsive to the objectives outlines in the Decadal Survey?

A-1 The only criteria with regards to the Probe AO mission themes are responsiveness to the 2020 Decadal Survey in Astronomy and Astrophysics, *Pathways to Discovery in Astronomy and Astrophysics for the 2020s* as provided in Sections 7.5.3.2 through 7.5.3.4. It is up to the proposer to argue that responsiveness. The Astrophysics Division will not use a wavelength to determine responsiveness, instead the standard process of external peer review will be used to evaluate responsiveness.

Q-2 The 2023 Probe AO community announcement notes that 'Participation by NASA Centers must be consistent with NASA's Center Roles policies.' Does this mean that GSFC and JPL can act as lead centers or are other centers included as well?

A-2 Center roles are found in the NASA Center Roles document, which is not publicly available. With the most recent 2022 update to the NASA Center Roles document, the Science Mission Directorate (SMD) has changed the definitions of what is considered small/medium/large missions for the purposes of the competition roles. This adjustment is based on applying inflation from 2016, when the levels were first established, to FY2023. The new language reads:

“For purposes of mission and instrument competition roles, the following definitions apply (figures are in FY23 dollars):

- Small Mission: a mission for <\$225M, without launch vehicle or Mission Directorate Unallocated Future Expenses (MD-UFE). Examples: Earth Venture Class, SMEX.
- Medium Mission: between a small and large mission. Examples: MIDEX, Earth System Explorers
- Large Mission: a mission for >\$600M, without launch vehicle or MD-UFE. Examples: Discovery, New Frontiers.”

SMD made no changes in this update to the mission sizes that Centers can propose to. Those roles continue to be the following:

Small, Medium and Large Missions: GSFC and JPL

Small and Medium Missions: ARC and MSFC

Small Missions Only: LaRC

No Lead Mission proposal role of any scale: AFRC, GRC, JSC, KSC and SSC

Q-3 The 2023 Probe AO community announcement is ambiguous about whether or not a NASA Center's participation is required and/or expected. Is it acceptable for a mission to be proposed, for example, with only an educational/non-profit PI and an industry partner providing the mission project management, systems engineering, and so on?

A-3 The 2023 Probe AO is an open competition, and there is no requirement for NASA (Center) participation. The hypothetical example described in the question would be compliant with the AO.

Q-4 The 2023 Probe AO is based on the Science Mission Directorate Standard AO template, with an Explorer-like timeline at least for the initial stages. Would the European Space Agency (ESA) be willing to make an early, significant, commitment to an unspecified Probe if the request came from NASA Headquarters directly?

A-4 ESA cannot partner with individual proposers, only with NASA. For that reason, ESA does not participate as a partner in proposals to NASA AO competitions. Generally European member states (plus the Japan Aerospace Exploration Agency and other space agencies) partner with proposers on NASA AO competitions.

Q-5 Could the Science Mission Directorate Standard AO template be modified to allow for a larger group of 'interested scientists' to sign on to a mission, perhaps growing their involvement as time goes on to become full Collaborators or Co-Is? Currently, the standard AO discourages large teams, but some mechanism to allow early involvement without penalty could increase opportunities.

A-5 The Science Mission Directorate Standard AO discourages large teams in order to ensure there is a robust pool of potential peer reviewers. NASA encourages proposers to describe plans for expanding the science team after selection through open and inclusive processes.

Q-6 Will NASA be organizing any meetings/workshops to facilitate discussions of Probes in general to make sure potential Principal Investigators can have their ideas heard and potentially give people a chance to join teams?

A-6 NASA will not be organizing workshops along these lines. Potential organizers of such workshops are welcome to submit a proposal for NASA support to the Topical Workshops, Symposia, and Conferences program element (Appendix F.2) of ROSES.

Q-7 Our organization is funded to develop an instrument that may be relevant to the mission objectives mentioned in the Astrophysics Probe community announcement

and which could easily be adapted for space. How can we make NASA decision makers aware of our project? How can we make applicants aware of our project?

A-7 NASA does not maintain a list of people for potential participants to contact. However, there is an Astrophysics Probe Teaming Interest webpage available at <https://explorers.larc.nasa.gov/2023APPROBE/teaming.html>.

Organizations may express an interest in teaming with other organizations on Astrophysics Probe proposals by filling out the form on the webpage. This is not a list of organizations who are capable of teaming but is simply a list of those organizations that have asked to be included in this list. Proposing organizations are not required to team with any organization on this list. **NASA does not endorse any of these organizations and does not accept responsibility for their capabilities or actions.**

Q-8 If ESA member nations are interested in providing contributions to a Probe, will Headquarters facilitate discussions in some way? For example, can HQ provide a list of people for Probe PIs to contact in each country to discuss possible member nation contributions?

A-8 NASA Headquarters will not be facilitating discussions. As a practical matter, contributions to NASA's PI-led, AO-initiated proposed missions are often initiated by science collaborators in another country seeking funding from their national funding agency, rather than by US proposers reaching out directly to foreign funding agencies.

As noted in response to Q-6, potential Probe proposers are welcome to submit a proposal for NASA support to the Topical Workshops, Symposia, and Conferences program element (Appendix F.2) of ROSES. As noted in A-7, there is an Astrophysics Probe Teaming Interest webpage available at <https://explorers.larc.nasa.gov/2023APPROBE/teaming.html>.

Q-9 Is there any maximum duration from the start of phase B until the launch readiness date?

A-9 It is anticipated that the launch readiness date will be no later than 9 years after release of the final AO. Phase B starts at the Step-2 down-selection, which is expected to be approximately 2.5 years after the final AO release.

Q-10 Why is the cost cap \$1B for the Astrophysics Probe when the Decadal Survey calls for a \$1.5B cost cap?

A-10 The Decadal Survey recommends a \$1.5B mission cost cap. The Astrophysics Probe AO will have a \$1B PI-Managed cost cap. As stated in the [Community Announcement](#), the PI-Managed mission cost cap does not include the launch vehicle, nor does it include the NASA held reserves. Together, these elements equate to a \$1.5B mission cost cap.

The \$1B PI-managed mission cost cap is an increase over the [Astrophysics Probe studies](#). The studies had a \$1B cost target including launch vehicle (but not including NASA held reserves).

Q-11 In the answer to Q-10, it is noted that launch vehicles are not part of the PI Managed Cost Cap (PIMCC). Given that launch vehicle (LV) costs were assumed to be \$150M in 2018 dollars for the probe studies, wouldn't the PIMMC still be below the recommended amount in the Decadal Survey in 2023 dollars when inflation is taken into account?

A-11 Here is the Probe costing information that was used. The Decadal Survey probe studies were done at \$1B cost cap including LV @ \$150M in Fiscal Year 2018 dollars. Using the NASA New Start Inflation Index, \$850M in Fiscal Year 2018 dollars = \$950M in Fiscal Year 2023 dollars. So \$1B PIMCC is an increase of \$50M in Fiscal Year 2023 dollars over the probe studies done for the Decadal Survey.

Q-12 The probe studies done for the Decadal Survey assumed that the Probe would be a NASA Class B mission. Is this assumption still correct?

A-12 No, the Probe mission will be a Class C mission. The definition of a Class C mission can be found in NPR 8705.4A, which can be found at <https://nodis3.gsfc.nasa.gov/>.

Q-13 In the answer to Q-5, it is noted that NASA discourages large teams in order to ensure there is a robust pool of potential peer reviewers. If we have people we consider to be part of our science working group, because they have expressed support for the project and/or provided some ideas, but who do not expect to be directly funded as part of the proposal, must we list them as collaborators?

A-13 The science team should be the people who have committed to do specific pieces of the work to be evaluated. Collaborators are committed to realizing the proposed science investigation. Other scientists who merely benefit from the mission's existence, because they will do science with it, are "endorsers" not collaborators. In addition, other people who worked on the proposal, and are therefore biased also need to be identified. They should be listed in the conflicted-parties spreadsheet, according to what they did – contributed ideas, red-teaming etc.